

IMPACT OF ARTIFICIAL INTELLIGENCE ON INSTRUCTIONAL PREPARATION, DELIVERY AND EVALUATION IN NIGERIA HIGHER EDUCATIONAL INSTITUTION

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Abstract

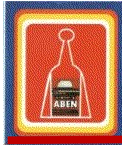
The study investigated impact of artificial intelligence (AI) on instructional preparation, delivery, and evaluation in Nigerian higher educational institution adopting descriptive survey research design. Population comprised 81 Business educators from Federal and State Universities offering Business Education in South-west Nigeria. No sampling since the total population is manageable. A30-item questionnaire tagged "Impact of AI on instructional preparation, delivery and instruction in Business Education (IAIIPDIIBE)" validated by three experts was used. Reliability of instrument was determined by test-retest method using Pearson Product Moment Correlation Co-efficient which yielded 0.82. Responses were weighted on Strongly Agreed (SA)/Very Great Extent (VGE) - 4 points, Agreed (A)/Great Extent (GE) - 3 points, Disagreed (D)/Low Extent (LE) - 2 points and Strongly Disagreed (SD)/Very Low Extent (VLE) - 1 point. Data collected were analysed using descriptive statistics of mean and standard deviation. Decision rule was 2.50. Findings highlight AI's potential to improve educational efficiency, address scalability challenges while considering ethical implications of its integration in education; use of AI in assessment has increase the accuracy of evaluation, provide timely and constructive feedback to students, helps in identifying patterns and trends in students' performance. However, the continued importance of human mentorship and face-to-face interactions in developing business leaders was emphasised. The study recommends among others that AI literacy be integrated into business curricula to prepare students for an AI-driven business world, Business educators to avail themselves for training on AI, and sufficient resources be provided by the institutions for effective use of AI teaching and learning processes.

Keywords: Artificial Intelligence, Instructional Preparation, Delivery, Evaluation.

Introduction

Artificial intelligence (AI) is increasingly transforming various sectors, and education is no exception. Artificial Intelligence (AI) refers to the field of computer science dedicated to creating systems capable of performing tasks that typically require human intelligence. These tasks include learning from experience, reasoning, problem-solving, understanding natural language, and perception. AI systems can range from simple rule-based algorithms to complex machine learning models (Russell & Norvig, 2023; Goodfellow, Bengio, & Courville, 2023). In the opinion of Boucher (2020), AI are systems that display intelligent behaviour by analysing their environment and taking action with some degree of autonomy to achieve specific goals. That is, there are specific roles performed by human being that AI are now conveniently performing in this era.

Before the evolution of artificial intelligence, instructional preparation, delivery and evaluation had been a tedious task for lecturers in Nigeria higher educational institutions because



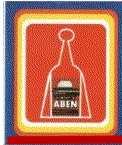
it has to be done manually. As AI technologies evolve, they offer innovative solutions for enhancing instructional practices. Recent advancements in AI have led to significant improvements in the preparation, delivery, and evaluation of instructional content (Huang & Hew, 2022). Corroborating this view, Kira and Weitz (2023) said AI-driven tools are now capable of personalizing learning experiences, automating routine tasks, and providing real-time feedback, thereby reshaping traditional educational methodologies.

Instructional preparation in education involves designing and organizing educational materials, activities, and strategies to effectively teach students. This includes creating lesson plans, selecting resources, and developing assessment tools. It aims at ensuring that teaching is coherent, engaging, and aligned with learning objectives (Marzano & Kendall, 2022). Instructional design as defined by Morrison, Ross and Kemp (2022), is the systematic process of planning, developing, and delivering educational experiences that help learners achieve specific learning outcomes. It emphasizes the importance of aligning content, activities, and assessments with instructional goals. Wiggins and McTighe (2023); Schmidt and Prawat (2023) define lesson planning as the process of creating and organizing a coherent course of study that aligns with educational standards and goals. To Guskey (2023), instructional planning is the process of structuring and organizing instructional activities, including formative assessments, to monitor student progress and adjust teaching strategies accordingly.

In instructional preparation, AI assists in designing curricula and generating educational materials tailored to individual student needs. This adaptability addresses diverse learning styles and speeds, enhancing overall educational effectiveness (Zhang, Zhao & Zhang, 2023). During instruction delivery, AI technologies such as intelligent tutoring systems (ITS) and adaptive learning platforms offer interactive and engaging learning experiences, enabling personalized support and immediate feedback (Chen, 2024). Furthermore, AI plays a crucial role in evaluating instructional effectiveness through automated grading systems and comprehensive learning analytics, which provide valuable insights into student performance and learning outcomes (Smith & Johnson, 2023).

Instructional delivery simply means presentation of instruction to the students. Hattie and Yates (2023) defined instruction delivery as the methods and strategies used by educators to present content, facilitate learning, and engage students in the educational process. It encompasses a variety of teaching practices and techniques aimed at ensuring that students understand and apply the material effectively. This includes direct instruction, interactive methods, multimedia use, and differentiated instruction. Moreover, in the words of Miller and Veatch (2023), Schmidt and Moust (2023), instructional delivery are the methods and techniques used by educators to present content to students, facilitate learning, and engage students in the educational process. It encompasses various teaching strategies, the use of instructional materials, and the management of the learning environment to achieve educational goals effectively. Okiridu and Godpower (2021) see instructional delivery as the various methods a teacher or trainer adopts in explaining lessons to a student for better understanding. In the light of the foregoing, adoption of artificial intelligence would ease teacher's presentation of instruction and enhance the student's better understanding of instruction which would eventually improve upon their academic performance.

Evaluation in education involves assessing the effectiveness, quality, and impact of educational programmes, teaching practices, and student learning. It encompasses various methods and approaches to measure educational outcomes, inform instructional decisions, and improve educational practices (Stiggins, 2023); Black & Wiliam, 2023). Assessing students, especially in large classes is a very tedious assignment using manual method. Adoption of AI



will however, simplify evaluation of students on the part of the teacher and enable the student to get prompt feedback from their teachers. It is against this backdrop that this paper aims at exploring these dimensions of AI in education, examining how these technologies influence instructional practices and addressing both the opportunities and challenges they present. By analyzing current AI applications and their impact on education, this study seeks to contribute to a deeper understanding of AI's potential at revolutionising educational paradigms.

Statement of the Problem

The integration of artificial intelligence (AI) into educational practices has the potential to transform instructional preparation, delivery, and evaluation in Nigerian higher educational institutions. However, there is a significant gap in understanding how AI is currently being utilized and its impact on these critical areas of education. Challenges such as limited technological infrastructure, lack of trained personnel, and resistance to change hinders effective implementation. Moreover, the disparity in access to AI tools across institutions raises concerns about equity in educational opportunities. This study seeks to explore these challenges while assessing the actual impact of AI on enhancing teaching and learning processes in Nigeria's diverse educational landscape.

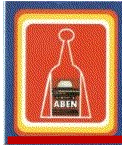
Research Questions

1. What is the impact of AI integration on instructional preparation in Nigerian higher educational institutions?
2. To what extent have AI tools effectively enhanced the delivery of instructional content, and what is their impact on student engagement and learning outcomes?
3. In what ways does AI contribute to the evaluation processes of student performance and feedback mechanisms in higher education?

Methods

The study adopted descriptive survey research design. The population comprised 81 Business educators from seven Federal and State Universities offering Business Education in South-west Nigeria which include Adeyemi Federal University of Education, Ondo, Bamidele Olumilua University, Ikere-Ekiti; Ekiti State University, Ado-Ekiti; Emmanuel Alayande University, Oyo State; Olabisi Onabanjo University, Ogun State; Osun State University, Ilesa and Lagos State University of Education, Epe. Three research questions guided the study. A 30-item structured questionnaire tagged "Impact of AI on instructional preparation, delivery and instruction in Business Education (IAIPDIBIE)" generated from the research questions was the instrument for data collection. Four-point rating scale was adopted. The responses were weighted on the following: Strongly Agreed (SA)/Very Great Extent (VGE) - 4 points, Agreed (A)/Great Extent (GE) - 3 points, Disagreed (D)/Low Extent (LE) - 2 points and Strongly Disagreed (SD)/Very Low Extent (VLE) - 1 point. The instrument was validated by three experts. A test-retest method was used to determine the reliability of the instrument using Pearson Product Moment Correlation Co-efficient which yielded 0.77.

A total of 81 respondents were reached via AI (Google form)/hard copies of the questionnaire out of which 75 responses were harvested representing 92.6% return. The data collected to answer the research questions were analysed using mean scores and standard deviation. The research questions were adjudged on the following basis: 3.50-4.00 Strongly Agreed (SA)/Very Great Extent (VGE), 2.50-3.49 Agreed (A)/Great Extent (GE), 1.50-2.49 Disagreed (D)/Low Extent (LE) and less than or equal to 1.00-1.49 Strongly Disagreed (SD)/Very Low Extent (VLE). The decision rule was that any item with a mean score of 2.50 and above was



accepted as Agreed (A)/Great Extent (GE) while any item with mean score below 2.50 was regarded as Disagreed (D)/Low Extent (LE) respectively.

Results

Research Question 1:What is the impact of AI integration on instructional preparation in Nigerian higher educational institutions?

Table 1: Respondents' ratings on the impact of AI integration on instructional preparation in Nigerian higher educational institutions.

S/N	Items	Mean	SD	Decision
AI in Instruction Preparation				
1	AI tools have made the process of creating instructional materials more efficient.	3.35	0.75	Agreed
2	I rely on AI for generating course content and educational resources.	2.84	0.74	Agreed
3	AI-driven content generators provide high-quality material for my courses.	2.73	0.93	Agreed
4	The integration of AI in instructional preparation has reduced my workload.	3.27	0.78	Agreed
5	I have faced challenges in using AI tools due to technical issues.	2.35	0.81	Agreed
6	Training on AI tools for instruction preparation is readily available.	2.60	0.93	Agreed
7	AI tools help in creating personalized learning materials for diverse student needs.	3.24	0.62	Agreed
8	I feel confident in using AI tools for instructional design.	3.19	0.75	Agreed
9	AI has enhanced my ability to update and revise instructional materials quickly.	3.31	0.65	Agreed
10	There is a lack of support from my institution for integrating AI in instruction preparation.	2.67	0.80	Agreed
Weighted Mean/Standard Deviation		2.95	0.83	Agreed

Source: Field Survey, 2024.

The results in Table 1 above revealed that all the mean scores are above the cutoff point (2.50), with the mean score ranging from 2.35 to 3.35. This is an indication that the responses are positive, meaning that the business educators have found AI tools impactful in instructional preparation with the weighted mean score of 2.95.

Research Question 2: To what extent have AI tools effectively enhanced the delivery of instructional content, and what is their impact on student engagement and learning outcomes?

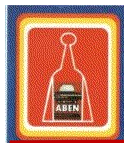


Table 2: Respondents' ratings on the extent of AI tools' effectiveness in the delivery of instructional content and their impact on students' engagement and learning outcomes.

S/N	Items	Mean	SD	Decision
AI in Instruction Delivery				
11	AI-based tools enhance the delivery of lectures and classes.	2.99	0.78	Great Extent
12	I use AI-driven virtual assistants during my teaching sessions.	2.00	0.89	Low Extent
13	AI tools help in managing classroom activities more effectively.	2.17	1.01	Low Extent
14	Students interact more actively with AI-enhanced learning environments.	2.89	0.83	Great Extent
15	AI tools provide real-time feedback to students during lectures.	2.68	1.06	Great Extent
16	The use of AI in instruction delivery has improved student engagement.	2.96	0.91	Great Extent
17	AI systems support diverse learning styles and needs in the classroom.	3.12	0.71	Great Extent
18	I am satisfied with the AI tools available for instruction delivery.	2.60	0.68	Great Extent
19	There are technical issues that hinder the effective use of AI during instruction delivery.	2.80	0.92	Great Extent
20	AI tools have made lectures more interactive and engaging.	3.05	0.66	Great Extent
21	AI tools assist in the grading and evaluation of student work.	2.76	0.79	Great Extent
Weighted Mean/Standard Deviation		2.71	0.92	Great Extent

Source: Field Survey, 2024.

Results in Table 2 above showed that nine of the mean scores are above the cutoff point (2.50), with the mean scores ranging from 2.60 to 3.05, while two of the mean scores are below the cutoff point with the mean scores ranging from 2.00 to 2.17. This is an indication that 81.82% responses are positive, meaning that many business educators have found AI tools enhancing the delivery of lectures and classes to a great extent with the weighted mean score of 2.71, while 8.18% responses are at variance. It could be deduced from the results that some business educators are yet to integrate AI tools totally in instruction delivery.

Research Question 3: In what ways does AI contribute to the evaluation processes of student performance and feedback mechanisms in higher education?

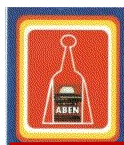


Table 3: Respondents' ratings on the contribution of AI integration on evaluation processes of student performance and feedback mechanisms in higher education.

S/N	Items	Mean	SD	Decision
AI in Instruction Evaluation				
22	The use of AI for student assessment has increased the accuracy of evaluations.	2.84	0.91	Agreed
23	AI-driven feedback tools provide timely and constructive feedback to students.	2.93	1.00	Agreed
24	AI tools help in identifying patterns and trends in student performance.	2.73	0.91	Agreed
25	There are concerns about the fairness of AI-based evaluations.	2.80	0.71	Agreed
26	I trust the results of AI-generated assessments and evaluations.	2.88	0.69	Agreed
27	AI tools have reduced the time required for evaluating student performance.	3.03	0.73	Agreed
28	The integration of AI in evaluations aligns with ethical standards.	3.00	0.76	Agreed
29	Students receive adequate support and clarification on AI-driven evaluations.	2.99	0.69	Agreed
30	My institution provides sufficient resources for effective use of AI in evaluations.	1.97	0.89	Disagreed
Weighted Mean/Standard Deviation		2.78	0.90	Agreed

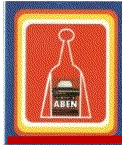
Source: Field Survey, 2024.

The results in Table 3 above revealed that all the mean scores are above the cutoff point (2.50), with the mean score ranging from 2.73 to 3.03 except one with a means score of 1.97. This is an indication that the responses are positive, meaning that the business educators attested positively to the contribution of AI integration on evaluation processes of student performance and feedback mechanisms in higher education with the weighted mean score of 2.78.

Discussion of Findings

The results in Table 1 above revealed that Business Educators have found AI tools impactful in instructional preparation by making the process of creating instructional materials more efficient. This is in tandem with the opinion of Zhang, Zhao and Zhang (2023) that AI assists in designing curricula and generating educational materials tailored to individual student needs. This adaptability addresses diverse learning styles and speeds, enhancing overall educational effectiveness. Corroborating this, Wiggins and McTighe (2023) attest that integrating AI into instruction preparation emphasizes the importance of aligning content, activities, and assessments with instructional goals. AI equally assists in creating and organizing a coherent course of study that aligns with educational standards and goals (Schmidt & Prawat, 2023). In essence, integrating AI into instruction preparation will widen the horizon of Business Educators in preparing an all-embracing/encompassing instruction aligning with ethical standard.

Results in Table 2 above showed that many Business Educators have found AI tools enhancing the delivery of lectures in classes to a great extent. This is supported by findings of various researchers such as Li and Zhang (2023) who found that business students using intelligent tutoring systems showed an average improvement of 0.4 standard deviations in performance compared to traditional instruction methods. AI-enhanced virtual and augmented reality simulations technologies are creating immersive learning experiences for business students. These simulations allow students to practice decision-making in realistic business scenarios. In line with the above, Patel et al. (2024) reported that students who participated in AI-driven VR business simulations demonstrated a 30% improvement in applying theoretical



concepts to practical situations compared to those who used traditional case study methods. In addition, AI-powered chatbots and virtual assistants are being deployed to provide all round support to business students, answering questions about course content, deadlines, and administrative issues. Thompson (2023) also found that 78% of students reported increased satisfaction with their learning experience when they had access to AI assistants. However, the result showed that some business educators are yet to integrate AI tools totally in instruction delivery. There is the need for everyone to move with the tide in order to be on the same page globally. However, Rodriguez et al. (2023) emphasised the continued importance of human mentorship and face-to-face interactions in developing business leaders.

The results in Table 3 above revealed that the use of AI in student assessment has increase the accuracy of evaluation, provide timely and constructive feedback to students, help in identifying patterns and trends in students' performance. This is in line with the assertions of Stiggins (2023) and Black & Wiliam (2023) that adopting AI in evaluation will enhance assessment of the effectiveness, quality, and impact of educational programmes, teaching practices, and student learning. This is also supported by Ademiluyi and Olupayimo (2022) that assessing students especially in large classes for skilled-based courses is a very tedious assignment using manual method hence, the need for integration of AI. This is supported by the findings of a study by Nguyen et al. (2024) that AI grading systems achieved a 92% agreement rate with human graders for business case analyses, while providing feedback 75% faster. Moreover, the result revealed that adoption of AI will simplify evaluation of students on the part of the teacher and enables the student to get prompt feedback from their teachers.

Conclusion

Based on the research findings, it was concluded that integrating artificial intelligence has the potential to significantly enhance business education, but its successful integration requires careful planning, ongoing evaluation, and a balanced approach that preserves the essential human elements of teaching and learning. As AI continues to evolve so also the approach of Business educators to leveraging on its potentials for instructional preparation, delivery and evaluation in Universities offering Business education in the South-western Nigeria.

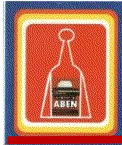
Recommendations

Based on the findings of the study, the following recommendations were made:

1. Business educators to avail themselves for training on artificial intelligence tools to enhance its integration into instruction preparation and also maintain opportunities for face-to face interaction and mentorship to develop crucial soft skills.
2. Incorporate AI literacy into business curricula to prepare students for an AI-driven business world; continuously assess the impact of AI integration on learning outcomes and student satisfaction, making adjustments as necessary.
3. Sufficient resources be provided by the institutions for effective use of AI in evaluations and partner with businesses to ensure that AI implementation in education aligns with industry needs and practices.

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